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AMERICAN
GAS LIGHT JOURNAL
FIFTY-EIGHTH YEAR

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Read the Advertisements

¶ Every gas manufacturer is vitally interested in keeping in touch with the latest developments in gas plant equipment, construction, manufacture and labor saving devices.

¶ The reading pages of the AMERICAN GAS LIGHT JOURNAL from week to week give all of the latest engineering developments, but the advertising pages will inform you of all the latest devices in every department of the gas plant.

¶ These advertisements are a tabloid education on all subjects of better operation and greater profit, because they tell WHY.

¶ Technical paper advertising is a modernizing force. Refuse its aid and you throttle your buying knowledge—and buying to-day is the keynote to business success. Therefore:—

Turn These Pages—and Read

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KOPPERS

BY-PRODUCT
COKE AND GAS OVENS

The most efficient method of carbonizing coal is in KOPPERS OVENS and the best coke and by-products are produced by this process.

H. KOPPERS COMPANY
Pittsburgh, Pa.

Builders of

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Tar Distilling Plants
Ammonia Recovery Plants
Benzol Recovery Plants

Exhibitors at the Second National Exposition of Chemical Industries, Grand Central Palace, New York City, Week of September 25th.

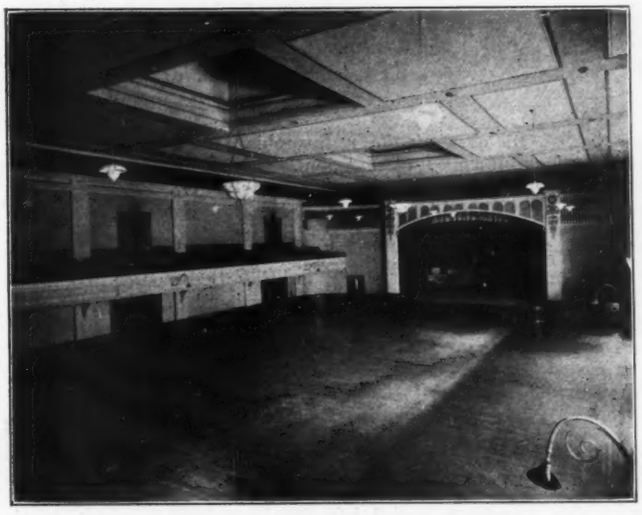
1859 FIFTY-EIGHTH YEAR 1916

AMERICAN

GAS LIGHT JOURNAL

VOL. CV., No. 10. NEW YORK, SEPTEMBER 4, 1916 WHOLE No. 3,052.

NIGHT VIEW OF HALL SHOWING ILLUMINATION FURNISHED BY TWO GAS FIXTURES



GAS FIXTURES PLACED BENEATH DOMES TO UTILIZE TO UTMOST THEIR VENTILATING FACILITIES

Though Present Commercially Available Lighting Fixtures Meet Possibly Ninety Per Cent of Conditions Presented There is Still an Important Field for Fixtures of Unusual Size

Lighting of Hall at Providence, R. I., Involved Consideration of Unusual Problems, in connection with Application of Gas Lamp Burners of Recent Design to Construction of Special Fixtures to Meet Unusual Requirements —Advertising Feature of Spectacularly Large Installations of Inestimable Value

By ROBERT FFRENCH PIERCE

The lighting of Infantry Hall, Providence, R. I., involved the consideration of some problems, the solution of which are of interest in connection with the application of gas lamp burners of recent design to the construction of special fixtures to meet unusual requirements.

While the fixtures at present commercially available meet perhaps ninety per cent of the conditions presented, there is a certain important field for fixtures of unusual size.

Entirely aside from the revenue derived from installations of this character, they carry an advertising value scarcely to be estimated. The public forms its opinion of the importance of the industry, not upon the accomplishment of enumerable easy tasks, but upon the successful solution of the fewer but more difficult and unusual problems. The five thousand candlepower illuminating of the exterior of the Singer Building is worth 50,000 candleppower in offices in the interior, as far as publicity is concerned.

Nothing will so quickly bring an industry or a concern into disrepute as the apparent inability to do anything but the easy and the obvious. For this reason, if for no other, the effort expended in meeting difficult and unusual situations is profitably expended.

The auditorium of Infantry Hall is 74 ft. x 115 ft. and is used for dances, gatherings of various kinds and theatrical productions. For several years it has been illuminated by electricity with gas for emergency lighting in the form of two clusters of open flame jets, and what was enthusiastically designated in the early days as "sun" burners or "sunbursts," the ring of gas jets being placed below an annular mirror reflector. These archaic survivals of the dark ages were suspended from the ventilating domes.

Management Desired More Effective Emergency Lighting

The management had had an extended and satisfactory experience in the use of incandescent gas lamps for lighting the corridors of the building, and wished a more effective and modern emergency lighting in the auditorium. On account of the occasional use of the hall for theatrical productions, necessitating the remote control of the auditorium lighting, none but emergency lighting was contemplated, but when assured that gas lighting was capable of providing the entire illumination for most uses to which the hall would be put, the management consented to consider a plan of general illumination by gas.

In buildings devoted to public gatherings the contribution of the occupants to the humidity of the atmosphere results in an oppressive "closeness" which in warm weather is likely to be at-

tributed to heat, particularly when imagination is stimulated by the sight of gas lamps. It was therefore considered necessary to utilize the ventilating facilities of the gas lamps to the utmost by placing them in the original positions of the "sunbursts"—immediately beneath the ventilating domes. In order to minimize radiant heat (so-called) the semi-indirect life of illumination, by which the radiant heat was reflected to the ceiling, was adopted, and in further pursuit of this object, it was decided to place the bowls 22 ft. from the floor.

This arrangement placed the entire burden of lighting a room 74 ft. x 115 ft. by semi-indirect illumination from such burner capacity as might be practically installed in two bowls. One and one-half foot candles was the least average illumination allowable for the ordinary purposes of the auditorium. The ceilings were quite light and it was expected that about one-third of the total light produced would be available for illumination.

$$\frac{(74 \times 115 \times 1.5)}{1.33\text{-}1.3} = 35295 \text{ lumens were required.}$$

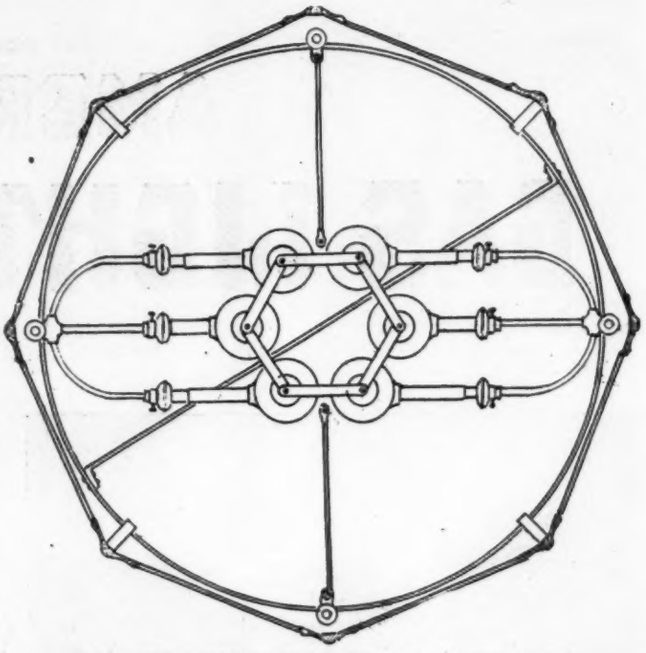
Assuming a light output of 625 lumens each for No. 33 mantles $(35295) = 57$ (say 60) mantles were needed, or thirty mantles

$$\frac{}{62}$$

per bowl. In view of the unfavorable location of the lamps as regards uniformity of distribution particularly in comparison with the well distributed fifteen fixtures (electric) of 300 watts each (64650 lumens in all) it would have been well to have provided at least twice the illumination calculated as a minimum, but even thirty mantles per bowl was so far in excess of any previous attempt in gas lighting that conservatism for once (most unfortunately) got the upper hand of confidence, and it was decided to abandon temporarily the illumination of the hall for dances, etc., where high illuminations were required, to our electrical friends. In the light of the results actually secured in the operating installation, sixty mantles per bowl would have been as easy of accomplishment as thirty.

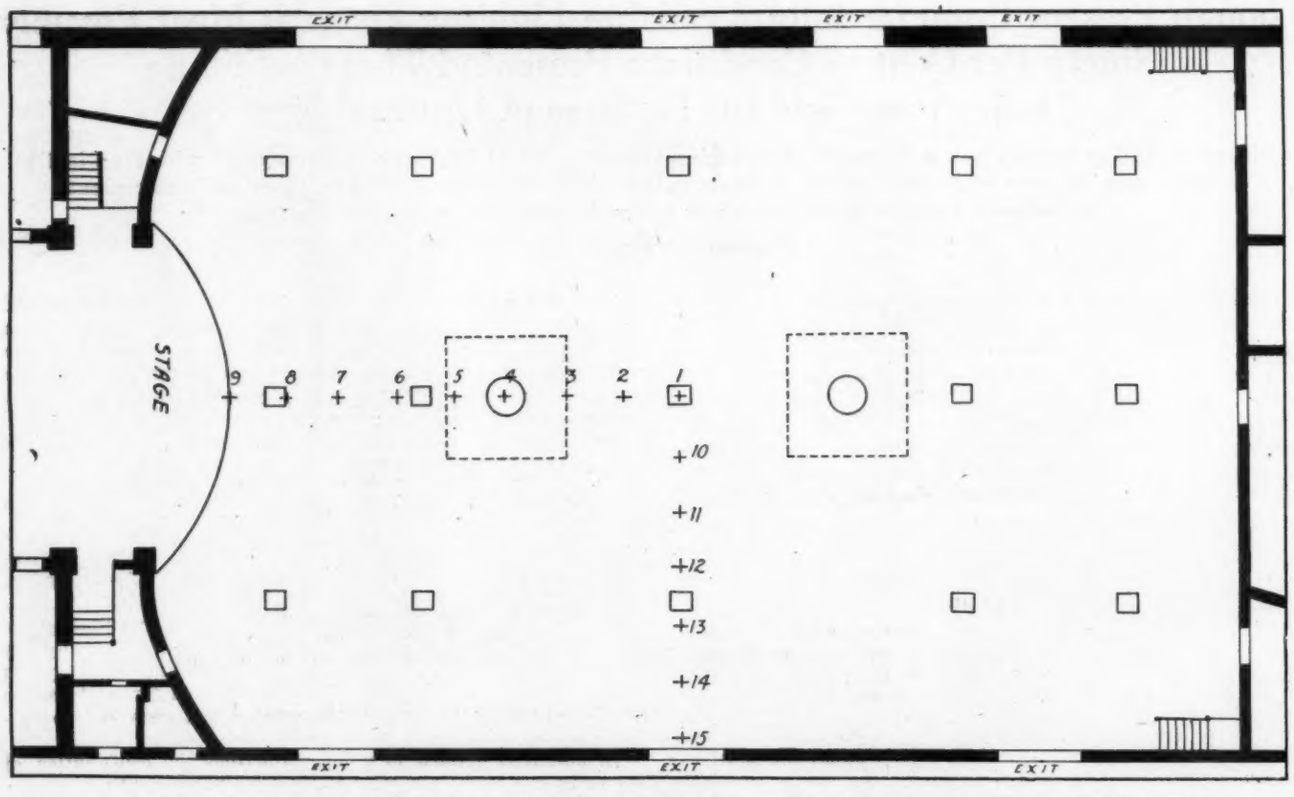
Each Fixture Equipped with Six 5-Mantle Horizontal Burners

As installed, each fixture was equipped with six five-mantle horizontal burners arranged as shown in the accompanying illustration, each group of three burners controlled by a single-pull-chain cock. Two pilots were provided, and the burners placed so close together that ignition from either pilot would light all mantles, this eliminating almost completely failure of the ignition system.



EACH FIXTURE EQUIPPED WITH SIX 5-MANTLE HORIZONTAL BURNERS

The bowl consists of a frame of metal supporting panels of diffusing glass, thus avoiding the opening up of joints under heat as would have occurred in a bowl of this weight and size with leaded joints. The resulting illumination, operation, and appearance of a finished installation have been entirely satisfactory to the management, and many inquiries from prospective purchasers of similar fixtures have resulted.



CIRCLES INDICATE GAS FIXTURES AND SQUARES ELECTRICAL—TEST STATIONS INDICATED BY CROSS MARKS

The actual illumination obtained at the various stations by the gas and by the electric systems is shown in the accompanying table. Considering the fact that the electric installation is rated at about twice the total candlepower of the gas installation, the latter makes a remarkably good showing. The fifteen electric fixtures consuming 300 watts each, entail an operating expense of $(15 \times 300 \times .10) = \$0.45$ per hour with electricity at $0.10 per kw. hour. The gas installation of sixty "two and one-half foot" mantles costs $(60 \times 2\frac{1}{2} \times .80) = \$0.12$ per hour with gas at $0.80 per 1,000 cu. ft.

Station	Gas	Electricity
1	1.6	2.45
2	1.76	1.88
3	1.9	1.75
4	1.9	1.84
5	1.9	2.10
6	1.44	2.45
7	.95	2.73
8	.53	2.36
9	.33	1.9
10	1.6	1.7
11	1.25	1.7
12	1.0	1.6
13	.57	1.34
14	.475	.475
15	.332	.351

Single Coat of Paint Affords Greater Protection to Iron and Steel Surfaces than Does Two or More Coats

A single coat of paint affords greater protection to iron and steel surfaces than does two or more coats, states the *Railway Engineer*.

This is due to the action of the paint in drying. Upon the application of a moderately thin layer of paint, it dries with open spaces around its larger granules. There are also tiny cellular cavities where free oil or globules of air have been present, narrow undergrooves and scattered particles of fairly large size.

To all appearances the surface is hard and firm, while in reality this is not true.

Upon the application of a second coat the surface is partially redissolved, and the under parts of the first coat are softened. The soluble granules are dissolved and fresh passages are opened up. The second coat, while apparently tight, has in reality made the first coat more porous, and the effect is increased by each succeeding coat.

A single thick coat of paint laid on without too much brushing will afford better protection, as the larger particles sink to the bottom, the solvent flows above them, and the gradual oxidation prevents the formation of empty spaces.

Click, or Dog, an Important Part of Gas Meter

The click, or dog, is an important part of the gas meter, stated J. B. McNary, manager of the Canadian Meter Company, in his paper on "What is a Gas Meter?" presented at the recent annual meeting of the Canadian Gas Association.

It is it that prevents the consumer from running up a bill against the gas company in case the meter should in some manner get disconnected and reconnected with the outlet placed where the inlet should be. The click is also useful in determining the amount of gas passing through a meter if the amount passed per revolution of the tangent is known; for instance, if a meter passes one-sixth of a cubic foot in one revolution of the tangent, which is the amount passed by nearly all 5-Lt. meters. Two minutes between each click will indicate that the meter is passing at the rate of five feet per hour.

Main Laying in Ottawa Has Been a Very Expensive Proposition

Mains in Past Were Laid with Little Appreciation of the Continuance of the Gas Industry—Mains Crossed Street as Many as Four Times in One Block

Main laying, in Ottawa, has been a very expensive proposition, owing mainly, to the fact that the gas people in Ottawa, a number of years ago, thought that gas would come to be a thing of the past, and apparently laid their mains according to this idea, stated P. S. Lamb, of the Ottawa (Canada) Gas Company in his paper on "Some Wrinkles on Distribution," presented at the recent annual meeting of the Canadian Gas Association at Quebec.

This has proved very costly to the present company, the city having entirely outgrown the mains. Consequently, it had to undertake the expensive work of renewing old mains with larger pipe, and relaying defective mains.

In renewing mains and services, there are many things with which it had to contend. First, it had to take care of the traffic on the street. Second, it could not interfere with the supply of gas to its customers.

Relaying, or renewing, is very easy work if the old main has been properly put down. The new main can then be placed to one side of the old, connecting all services as the work proceeds.

In connecting services to mains, it is best to use two street elbows. The two elbows make a flexible joint, leaving the service without the strain sometimes caused by the use of only one elbow, or by connecting to the side of the pipe.

The two elbows take care of contraction, or of any movement due to the frost, and thereby save services from breaking off at the main.

Mains Crossing Street Four Times in One Block

In renewing, the old mains are often found laid in an odd fashion. Mains crossing to and fro, four times in a block of 800 ft. have been found, inside and under the sidewalk, and from over 15 ft. in depth, to actually laying on top of the ground. In such cases, the best way to lay the new pipe is to occupy half the street, leaving the other half for traffic, and connecting the new main to its source of supply, and temporarily connecting the old main to any convenient supply. The work can then go ahead without any trouble, connecting services to the new main, or making whatever alterations that are required.

If new services, they should be connected to the meter and the old ones plugged up.

At the same time, services to the opposite side of the street that cannot be connected through being too deep, or for any other reason, should be laid in the middle of the street. Everything, with the exception of the temporary connection to the old main can be backfilled as the work proceeds.

By following this procedure there is no unnecessary digging or blocking of the street.

The other side of the street can then be left to one or more service gangs, according to the work to be done.

Renewals Take More Skill and Attention Than New Work

Renewals take more skill and attention than new work.

An important factor is to have everything required for the job on hand. Good tools are essential. As there are a great many cross trenches, barricades, long and short, wood blocks for blocking up pipes, are very necessary.

Take Industrial Fuel Contracts Aggregating Approximately 131,700,000 Cu. Ft. of Gas During Year

The industrial fuel contracts taken during the fiscal year, ending June 30, by the Consolidated Gas Electric Light & Power Company, of Baltimore, will approximate 131,700,000 cu. ft. of gas per annum. These contracts included 186 plants where gas has been substituted for other fuels, large industrial plants where the use of gasoline, coal or other fuel has been abandoned for gas.

Gas Production In Massachusetts Increases in 1915

The total production of gas of all kinds in Massachusetts, amounted to 15,786,630,000 cu. ft. in 1915, while in 1914, it was 15,536,223,500 cu. ft., a gain of 1.7 per cent in actual output. During the year the population of the state increased about 2.5 per cent.

Large Machine Shop Effects Economy by Using Gas at 55 Cents Per Thousand Cubic Feet for Power Development

Company Figured Cost would be Lower with Gas than by Installing Steam Power Plant or by Purchasing Electric Current—Actual Operation of Plant has Substantiated Belief

Operating a large machine shop with a gas engine is a departure from the usual practice, and for this reason, in particular, the power plant installation in the new factory of the Turner & Moore Mfg. Company, Detroit, is of unusual interest. From the standpoint of economy there is an additional interest in this power plant because of the fact that the gas is not supplied at a specially low price but is costing the consumer 55 cents per 1,000 cu. ft. In spite of this rather high rate the company decided that the cost would be lower with gas than by installing a steam power plant or by purchasing electric current from a commercial lighting and power plant and states that its conclusions are substantiated by actual operation, states F. L. Prentiss, in an article, describing the work, in the *Iron Age*.

Consumes From 1,800 to 1,900 Cu. Ft. of Gas Per Hour

At present, with considerable machinery to be installed, the engine is being operated at 75 to 80 per cent of its capacity; the plant is now using about 115 hp. and is consuming 1,800 to 1,900 cu. ft. of gas per hour, making the cost considerably less than it would be were steam power or electric current from a commercial circuit used. The heat ordinarily lost through the cylinder walls of the engine becomes a by-product and is used in the form of steam for heating a soda kettle, and will also be used for providing the domestic hot-water supply. The power is furnished by a 150-hp., four-cylinder vertical gas engine located directly in the center of the first floor of the plant.

The plant occupies a two-story standard reinforced-concrete building of the flat slab type, 325 ft. long and 75 ft. wide, the most modern practice being followed in its design and arrangement. It is divided into four bays by 16-in round concrete columns spaced on 18-ft. 9-in. centers. The ceilings are 12 ft. 6 in. in height. The floors are of 8-in concrete slabs, the building being designed to carry a second floor load of 175 lb. per square foot. A basement 19 x 75 ft. is provided at each end, one basement section being used for lockers and a wash-room and the other for the heating plant. Continuous window space is provided between the curtain walls extending from about 4 ft. above the floor to the ceilings. The entire plant is used for machine work in connection with automobile parts, the first floor being devoted to cylinders and crank-cases and the second floor being used for machining smaller parts.

Gas Engine Provided with Apparatus for Utilizing Heat of Jacket Water.

The gas engine, which was furnished by the Bruce-Macbeth Engine Company, Cleveland, is provided with apparatus for utilizing the heat of the jacket water according to the Meriam steam process. A closed circulating system is provided which includes a centrifugal pump that forces the water over the engine cylinder walls at a high velocity to prevent the formation of bubbles on the surface of the cylinder jackets, and thus promote the flow of heat or the cooling effect of the water. The water passes into an inclosed tank, which is connected to the suction side of the centrifugal pump, and a constant circulation is maintained between the cylinder jackets and the tank.

A pressure of 4 to 5 lb. is maintained on the tank and the pressure on the cylinder jackets is about 25 lb., this higher pressure being due to the resistance caused by forcing a large volume of water through the jackets rapidly.

The power plant equipment includes, in addition to the gas engine and centrifugal circulating pump, a small Novo gas engine operating an air compressor for supplying two small air tanks on which a 250-lb. pressure is maintained for starting the engine on air pressure, an air compressor that provides the air supplied for cleaning work and for water compression of cylinders, this being belt driven from the lineshaft, and a dynamo driven from the crankshaft for providing current for the lighting circuit. The steam process tank is 20 in. in diameter and 8 ft. in height. Adjoining the tank is a soda kettle which is heated by steam coils from the tank. Although only one soda kettle is used at present it is stated there is sufficient steam to heat four or five similar ones. The steam not required is carried out through the side of the building by an exhaust line. The entire power equipment is compactly located, the smaller units and steam process tank being placed at the side of the large engine. A domestic water heater will be installed shortly and a portion of the by-product steam will be run through coils in this heater to provide a supply of hot water for the washroom.

The drive from the engine is from a 60-in. flywheel on the crankshaft that drives a 72-in. pulley on the lineshaft. The flywheel runs at 275 r. p. m. and the lineshaft pulley at 200 r. p. m. Adjoining the large lineshaft pulley is a smaller one that drives the main lineshaft on the second floor, the belt extending from this pulley up through the floor to the lineshaft above. A clutch is located on each side of the lineshaft pulley so that either one or both ends of the main lineshaft may be run at one time.

Three lineshafts in addition to the main lineshaft are provided in each half of the building on each floor so that the lineshafts extend the length of the building in the center of each bay.

The lineshafts are cut in two at the center, making sixteen separate shafts, any or all of which may be in operation at one time. The belt drive from the main lineshaft to the lineshaft in the bay farthest away from the main lineshaft requires a long belt as these two shafts are on 37-ft. centers. The lineshaft hangers are attached to short stringers instead of having continuous stringers as is the general practice. The main lineshaft is 3 12/16 in. in diameter at the driving pulley and tapers down to 2 3/16 in. near the ends.

Plant Arranged for Convenient Handling of Material

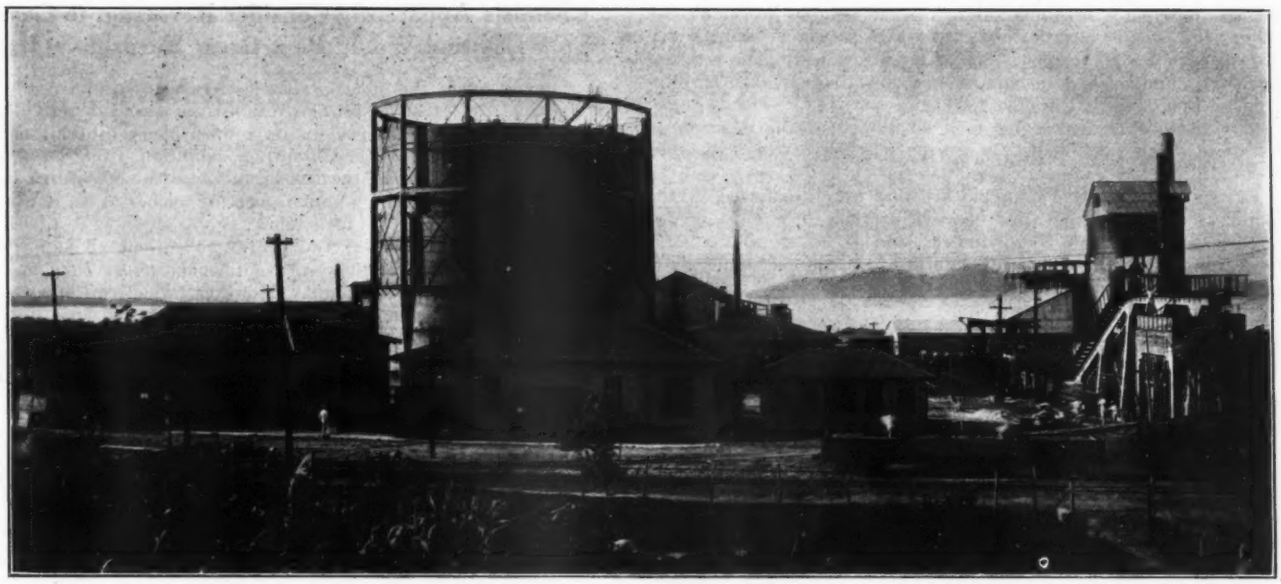
The plant is arranged for the convenient handling of material. There is an elevator at each end, one 8 x 14 ft. and the other 5 x 8 ft. At the rear of the shop is a railroad siding and a concrete loading platform, the latter being on a car floor level and extending into the plant 4 ft. above the first floor level. One of the elevators adjoins this platform, making it convenient for the handling of material to and from the platform. This elevator serves the basement where the heating plant is located, in addition to the first and second floors.

World's Output of Petroleum in 1915 Greater than Ever Before

That 1915 was the most successful year of production in the history of the petroleum industry is shown by statistics just compiled under the supervision of J. D. Northrop, of the U. S. Geological Survey, Department of the Interior.

The total quantity of crude petroleum entering the world's markets in 1915, which amounted to 426,892,673 barrels, exceeds the former record, established in 1914, by 28,194,307 barrels, or 7 per cent.

The bulk of the increase in 1915 came from the United States and Mexico, though Russia, Argentina, and Japan recorded significant gains.



SAN JUAN PLANT OF PORTO RICO GAS COMPANIES WHERE PRESSURE RECORDS WERE TAKEN DURING HURRICANE

Though Subjected to Hurricane for More Than Four Hours Porto Rico Gas Plants Sustain No Damage

Pressure Chart at San Juan Plant Indicates Little Effect of Strain on Pressures in Holder—Crops and Poorly Constructed Buildings on Island Damaged to Extent of $1,000,000—Gas Service Continued Uninterrupted, Though Electric Light, Street Railways and Telephone Systems Were Put Out of Business for 24 Hours

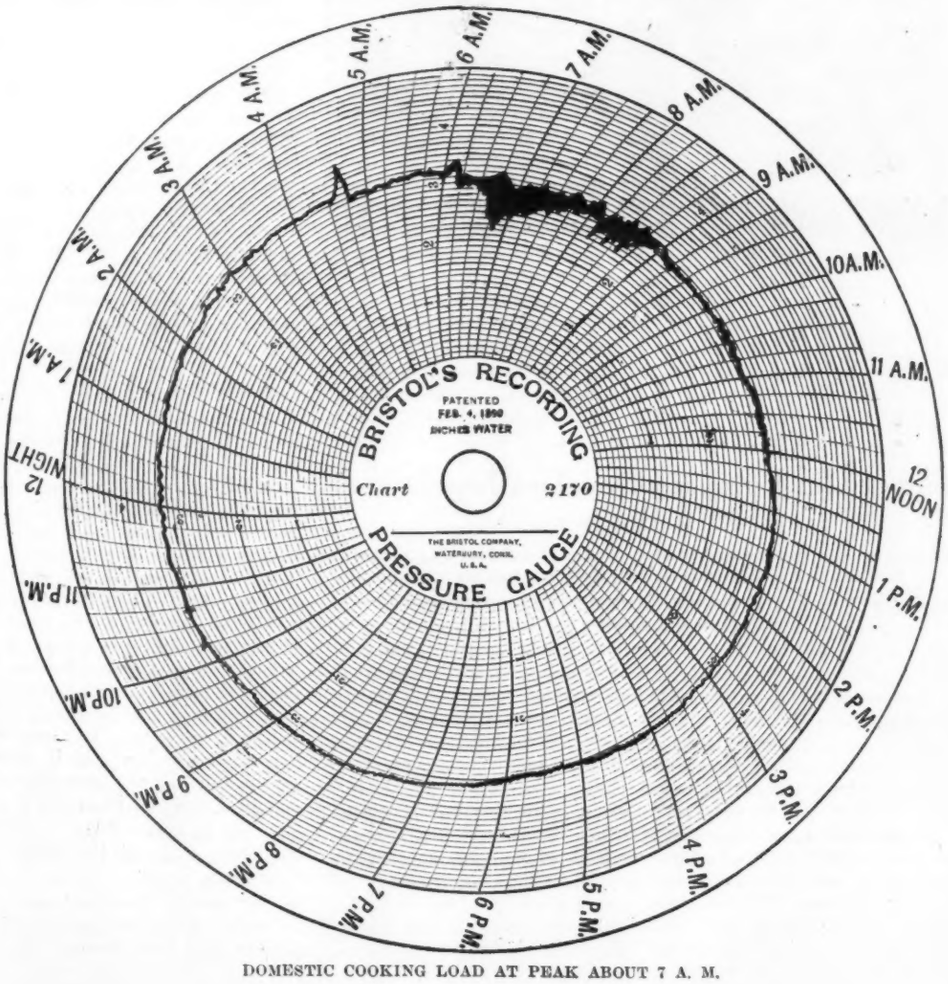
Though subjected to a hurricane which reached a maximum velocity of 94 miles per hour from 4:30 a. m. to 9:00 a. m. on Aug. 22, the gas plants at Ponce and San Juan, Porto Rico, did not sustain one dollar's worth of damage, nor was the service to customers affected in any way.

The barometers commenced to drop at 2 a. m. and, at 4:30 a. m. the first squall struck. At 5 a. m. the wind had a velocity of 50 miles per hour, and the maximum velocity was reached at 7 a. m. From then until 8 o'clock the velocity was 70 miles per hour. At 6 a. m. the barometer reading was 29.52.

The hurricane travelled over the northeast half of the island in a northwesterly direction, doing about one million dollars' worth of damage to crops and some of the poorly constructed buildings. It put the electric light, street railroad, and telephone systems out of business for 24 hours.

According to R. M. Redding, general manager of the gas plants, not the slightest damage was done to either of them. The accompanying illustration of the pressure chart at the outlet end of the governor at the San Juan plant shows what little effect a 94-mile hurricane has on the pressures in a modern gas holder.

The systems were constructed by the Public Service Construction Company of 30 Broad Street, New York City. The Cruse-



DOMESTIC COOKING LOAD AT PEAK ABOUT 7 A. M.

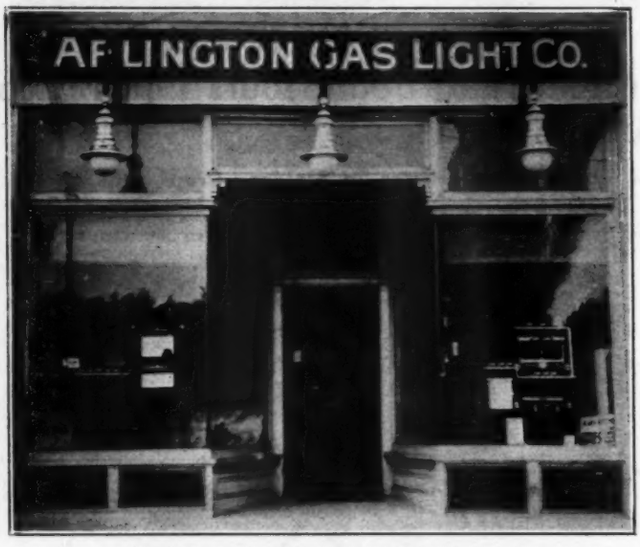
Kemper Company of Ambler, Pa., constructed the holder at San Juan, the small variation of pressures in which, during the ordeal, is shown on the chart previously mentioned. The benches, purifiers, chimney and machinery were installed by the Gas Machinery Company of Cleveland, Ohio.

The Porto Rico companies took advantage of the occasion to advertise in the afternoon papers, the English saying "Business as usual." They commented on the matter as follows:

"The Porto Rico Gas Company's plants were unaffected by the storm, and, although the wind blew with terrific fury, nothing was disturbed, nor a single complaint received of failure of the service. In fact, users of gas for lighting, cooking and other purposes suffered no inconvenience whatever."

Massachussets Company Features Show Window Display

The advantages of an attractive store front are fully appreciated by the management of the Arlington Gas Light Company in Massachusetts. The company recently moved its town office and appliance store to a new building on Massachusetts Avenue, nearer the high-class residential district. The store front is lighted by three large gas arcs and the sign over the entrance is especially conspicuous.



WINDOWS USED EFFECTIVELY FROM WEEK TO WEEK FEATURING VARIOUS APPLIANCES

Gas appliances of various types are featured from week to week. At the present time, ranges are displayed and a campaign is being conducted for their introduction into the territory, which includes the towns of Lexington and Belmont, in addition to Arlington.

Denver Gas Company Develops New Branch of Its Business

Crown Tar Works, as Adjunct of Company, Now Securing Cream of Colorado's Roofing Material Sales—This Despite Competition of One of Largest Roofing Materials Companies in the Country

A comparatively new, but profitable phase of the business of the Denver Gas & Electric Light Company has been developed by the tar department, which is known as the Crown Tar Works, and as a result the bulk of the roofing material business of the state of Colorado is now being secured by the company.

This situation has been attained despite the vigorous efforts of one of the largest roofing material companies in the United States. This national concern has been offering a twenty-year guarantee to all purchasers for its roofing, whereas the Denver company has secured the bulk of the business with a ten-year guarantee for a much lower priced roof. Local patriotism is a great feature of Denver's business life and the popularity of the Denver Gas & Electric Light Company has stood in good stead in this roofing campaign because of the assistance given by Denver architects and roofers.

Chemists Apparently Consider Reversion to Gas Lighting Would Be a Great Hardship

For many years this journal has been an ardent advocate of gas lighting from truly honest motives, because it considers lighting by gas has many advantages, in its proper place, over all other illumination agencies. The following quotation from publicity matter being circulated by the American Chemical Society in connection with its forthcoming annual meeting comes to us, it would seem, almost in the nature of a rebuke:

"The outbreak of the war two years ago cut off all supply of potash from Germany, and *threatened* to make us *go back to gas lighting* and the kerosene lamp. However, American ingenuity and enterprise was equal to the occasion, and the wizards of the wonderful research laboratories of the General Electric Company set to work to find a substitute. At the Second National Exposition of Chemical Industries, which opens concurrently with the meetings of the chemical and technical societies, the accomplishments of American glass chemists will be shown."

The Business Man's Interest in Politics

The broad proposition on which our Government is based, and on which its security and prosperity depends, is that every citizen should take an active interest in the politics of the Government. Especially is this true of every man engaged in business, having business interests large or small at stake. The welfare of the country is dependent upon the prosperity and growth of its business interests, its industrial establishments. Few laws are proposed, and still fewer enacted that do not, in some way, affect business.

There is in the country a class of unthinking voters, and another class whose votes are a matter of barter and sale. Neither of these two classes can be called good citizens. It is on them the demagogue works. He sways the unthinking voter by various methods; he buys the other. The number of the two combined is very large, and form a very dangerous element, an element which threatens the security of business.

The growth of socialism is largely due to the fact that the business interests of the country take no active steps to check it. Business men complain of oppressive, and what they have every reason to call, unjust laws. Every law of that kind found its way to the statute books through the neglect of those whose interests were at stake. Had organized labor shown the same lukewarmness, the same lack of interest, not one of the great measures in their behalf would have been enacted by Congress or by state legislatures. Organized labor can find time to think about, and to take an active interest in, politics, especially such as will affect its cause, while those whose money operates, and whose brains direct great business and industrial enterprises, may think, but they do not act.

It is true that when a measure is proposed every member of Congress should regard it from a nationtl point of view—view it as to its general effect on the country at large—but in the main he does not so view it. He looks as to its effect on the voters, especially those of his own district, that is, the voters who go to the polls and cast their ballots. He does not care for the stay-at-home voter, he has no interest in him, but rightfully regards him as not entitled to any particular consideration. I have been in large department stores and seen hanging in plain view of the shopper many placards reading: "If you do not see what you want, ask for it." Organized labor has acted on that principle. It has not hesitated to ask for what it wanted. It asks for it before and after the election. But business men are too much occupied to ask, or to oppose, before election, what organized labor or others may ask detrimental to business.

In the American Congress the number of members who have had large business experience is very limited, while the number who have an ambition to make themselves notorious by introducing and advocating extreme and impracticable measures is all too large. In some sections of the country the pathway to political preferment runs along the line of railing at "the Interests," talking about "predatory wealth," "trusts," etc. What the country needs most at this time is more business men in Congress, more business men in state legislatures, more business men taking an active part in politics, and more business men at the polls on election day.

—*American Industries.*

Baltimore Company Adds 36,824 Cubic Feet Per Hour to Its Output for Industrial Uses During Months of May, June and July

New Customers Include Nail Making Plant, Wagon Repair Works, Tin Novelties Manufacturer and Zinc Plant —Railroad Company Takes Additional 1,200 Cu. Ft. Per Hour for Use in Cyanide Furnaces and Oven Furnaces for Toolroom Work

A summary of the new contracts taken for industrial gas use by the Baltimore Consolidated Gas Electric Light & Power Company during the months of May, June and July shows an increased send out for this purpose of 36,824 cu. ft. maximum hourly capacity.

The company has equipped a 6x12x50 ft. japanning oven with gas burners of 100 cu. ft. per hour gas demand for the Baltimore Machine Decorating Company, to be used for drying, which is essential to their decorating process. The Baltimore Oxidizing Nail Company has replaced coal-oil burners with gas burners, with a demand of 100 cu. ft. per hour, for use in special treatment of nails.

The City Baking Company has made provisions for doing its own repair work on delivery wagons, and has a gas-fired tire heater and brazing burners requiring 450 cu. ft. of gas per hour.

The Steel and Tin Products Company has installed a 25 hp. gas engine for driving punch presses and other machinery used in the manufacture of tin novelties.

At the Electrolytic Zinc Plant there have been added two more 1000-pound crucibles for melting zinc, thereby increasing the gas demand 1,800 cu. ft. per hour; also, the Baltimore Tube Company has built a 12-foot extension on the annealing furnace, making a gas demand increase of 240 cu. ft. per hour.

An eight-inch main extension has been made into the locomotive shop of the Baltimore & Ohio Railroad Company at Mt. Clare, to serve 1,200 more cu. ft. of gas per hour for use in cyanide furnaces and oven furnaces for toolroom work, which is a new line for the Mt. Clare shop.

Numerous instances of hotel and large gas range contracts have been handled, among which is additional equipment for the Stony Run Club, East Lane, and the Gilman Country School, Roland and Belvidere avenues.

The following table is a summary of the business obtained during the months cited:

Industry Classification	Customers Represented	Cu. Ft. Hourly Demand
Auto Tires	2	200
Bakeries	10	1160
Battery Works	1	75
Bottle Cap Manufacturers	1	2400
Can Manufacturers	1	500
Candy Manufacturers	5	1065
Chemicals	6	735
Clothing Manufacturers	18	780
Clubs	6	1000
Confectioners	1	130
Copper Works	1	410
Dry Docks	1	150
Electro Metallurgical	2	1800
Factories	3	100
Fish Dealers	1	100
Furniture Manufacturers	4	60
Glass Manufacturers	2	400
Hat Manufacturers	1	80
Homes	1	100
Hospitals	5	1930
Hotels	2	200
Ice Cream Manufacturers	3	180
Junk Dealers	2	163
Laboratories	2	220
Laundries	1	420
Lithographers	2	1000
Lunch Rooms	6	1470
Machinists	8	2055
Matrix Manufacturers	1	100
Meat Stores	2	300
Pharmacies	1	72
Posters	1	180
Railways	2	260
Residences	26	8318
Restaurants	12	2376
Saloons	1	600
Schools	1	520
Shirt Manufacturers	3	300
Shoe Manufacturers	9	275
Soap Manufacturers	2	200
Steel Mills	2	1500
Studios	1	150
Tire Repair Shops	1	50
Theatres	3	130
Tinsmiths	3	170
Tube Mills	1	1440
Vulcanizing Works	1	180
Water Plants	1	250
Water-proofing Works	1	170
Welders	1	400

Team Work in Protecting Industry

Mobilization and preparedness are the orders of the day. It is well for our army and navy and our people to be prepared for any emergency, but that they may be fully and efficiently equipped, first consideration should be given to our industrial preparedness. If government by unwise and burdensome laws restricts and retards the growth and prosperity of industry, in just so much is the country endangered in times like these. If war should come, the greatest need will be that our industries, our mills, factories and railroads shall be prepared to meet the great tax that will be put upon them. It may be then that the Government and the people will realize how much depends upon our industries and that they are deserving of every consideration and encouragement.

Naturally, the industries of the countries now fighting have suffered greatly, to such an extent in some cases, that they have not only lost their entire export trade, but cannot supply their own needs. Our industries have gained through Europe's lack, until at present, nearly every branch of trade is breaking all records in volume of business. New factories are being built on every hand to fill the ever increasing stream of orders. The demand for employees and materials has forced prices up beyond all reason for ordinary times. But these are not ordinary times, they are abnormal and cannot last. The great war will come to an end, probably as suddenly as it began, and then will come a day of reckoning and readjustment for business.

Where will we stand? What will be our position? It will depend upon our industrial preparedness—our ability to hold to a large extent the business we have gained at the expense of Europe.

What is most desired in every organization is team work. This is brought about by everybody, from the management down, working in unison with perfect understanding, not only of what they are doing themselves, but of what others are doing, so that they may all work to the same end. In such an organization the right spirit of competition and the desire to excel exists. The result is efficiency of a high order.

Business men have their different associations, local, state and national. They should make use of them, support them, get together by means of them to exchange ideas and experiences to overcome and adjust problems. Individual effort, no matter how praiseworthy, is seldom effective. It is only through co-operation that big results are obtained. The fallacy that "competition is the life of trade" died long ago.—*John T. Kirby in American Industries.*

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Educating to Public as to the Most Economical Gas Lamp

The short note in the news section of last week's issue in regard to the window display of the Providence Gas Company, advertising the wastefulness of the open jet burner, though in line with what many other companies are doing—especially those interested in getting the heat unit standard test—is a step in the right direction and worthy of commendation; especially so, since, in papers presented at recent gatherings, the indifferent attitude of the gas man towards the lighting end of his business has been quite frequently criticized.

A long dissertation on the wastefulness of the open jet burner is superfluous. It is a point too well established to require elaboration. Yet the statement has been made on many occasions that many gas companies are not over eager for a fuller comprehension, on the part of the public, of the wastefulness of the jet burner, due to the lower consumption of the gas mantle. This is short-sighted and illogical in the extreme. One gas mantle will not consume the quantity of gas an open jet burner will, fortunately, but a general adoption of the most efficient lighting unit, and the education of the public in its advantages over other forms of lighting will multiply the number of mantles many times, and the consumption will increase proportionately.

Letters to the Editor

Quite frequently some of our readers take verbal issue with statements which appear in articles published in the AMERICAN GAS LIGHT JOURNAL. Very often there are valuable thoughts contained in the arguments advanced by such readers in support of their contentions. If these thoughts were set down in writing, or if we were at liberty to do so, we would very gladly give them a place in our columns.

The wisdom of the universe is by no means confined within the walls of the offices of this journal. The biggest man in the gas industry or any other is liable to run off at random in some particulars. We endeavor to select with the utmost care the articles we publish. No editorial opinion is expressed without mature deliberation, and a canvass of the opinions of those we consider should be qualified to pass judgment. We endeavor at all times to maintain a high degree of accuracy in all statements that are made.

Sometimes some contributor describes a new process or development that is frankly beyond our comprehension. We do not withhold publication for such a reason. If we knew all about it before, it would not be new. We publish the article mainly upon the strength of the man's standing in the profession. It may be that there is some flaw in the theories he advances, some weakness in his proposition that escapes us, but which will not escape the vigilance of all of our readers. It would be a distinct service to the whole industry if a reader who thinks he has discovered such a weakness would send us for publication a letter setting forth his views. This might lead to further discussion which would bring forth many ideas of inestimable value.

We suggest elsewhere in these pages, for instance, a patrol system for furthering the popularity and sales of gas. Is the scheme impractical or objectionable? If so, why? Would it not be of benefit to the industry to have this proposition fully discussed? Others besides this journal have advocated some such an arrangement. Surely the proposition warrants consideration at least.

We like compliments, and we like to be told that we are right in the statements we have made. But letters of such a nature shed no new light on a subject already treated. Consequently it would be an imposition on our readers to publish them. Such letters we carefully file away for frequent future perusal. But letters of criticism, of correction and of contradiction will always find a space open in our columns. We are endeavoring to publish a journal that is truly representative of the gas industry and

that is of real value to those at work in its field. If we are in error in any of the statements we may make, or if we have unconsciously spread false theories, we want to be informed of the fact, and, in turn, we desire to correct the impression that has been made on the minds of some of our readers.

The space devoted to letters to the editor in the technical journals in some fields of engineering activity is the best part of such publications. This statement is made not in disparagement of the quality of the material contained in the other pages, but in appreciation of the valuable co-operation their readers are giving them. The "letters to the editor" idea has not been carried out to the extent it should have been in the gas field, but "it is never too late to mend." The AMERICAN GAS LIGHT JOURNAL invites the fullest criticism of all matter contained in its pages, and will never hesitate to publish the sharpest criticism. In fact the sharper it is the more heartily it will be welcomed.

The Patrol System as Applied to the Gas Field

The economical maintenance of improved roads has been, and is, a vital problem in highway engineering. A system styled "The Patrol System" has been evolved and has given in almost every case very gratifying results. Its basis, in brief, is having someone constantly on the lookout for defects that occur, and provision at hand to remedy them expeditiously. It works somewhat on the principle of "a stitch in time saves nine." One man or gang is given a definite territory to cover. This is neither so large as to necessitate haphazard work, nor so small as to give much time for idling.

Though our fields are almost entirely dissimilar, it would seem that the gas industry could adapt this patrol system idea of the highway field to its purposes with profit and to the great enhancement of its popularity.

The crying need of the gas business to-day is a better understanding on the part of the public of the value of our product and of the wares—as represented by modern gas-using fixtures and appliances—we have available for sale.

In previous editorials in these columns we have suggested means of spreading such a knowledge by means the gas companies already have on hand. A patrol system would centralize and systematize this work.

In a city of any size such a patrol system would pay for itself several times over each year in the results it would accomplish. Each unit—each man in the system—would have a definite district to cover. It would be his duty to go over that district with a fine tooth comb. He, in time, should have a speaking acquaintance with every storekeeper, shoemaker, barber, tailor, etc., in his district as well as a fairly general acquaintance with the dwellers in the district.

Such a man might seem an impossibility, but he is not. Every political machine in the country has found his kind in large numbers, and at very low rates, and political machines are not noted for the intelligence of their memberships. But the gas company's man would have to be of a much higher order than this class. In addition to the ability to make friends, he should be a salesman and should, to a certain degree, be a mechanic. He should know gas, and have the available appliances for using it at his finger tips.

His duties should consist literally of patrolling his district. He should know what kinds of works his prospects have in hand so thoroughly that for each new appliance, or improvement to an appliance, that is put out he could cite offhand a dozen prospective buyers for it.

He should keep in touch with those to whom he has made sales, and should visit them regularly to see that the installations are working properly and should make certain that the buyer thoroughly understands their use. Such tactics will popularize gas, and such popularity will increase the number of gas consumers. Many a gas range has been condemned as inefficient and worthless when, as a matter of fact, it was merely dirty and dust clogged.

A white tiled butcher shop attracts customers. Lighting by gas would accentuate its whiteness after dusk to a greater extent than can electricity. This is a minor advantage, but, if the gas companies had the facilities available to point it out to every butcher with a white tiled shop, there would be a vastly greater number of such places lighted by gas than there are at present. But these facilities the gas companies lack. It would be but a matter of a minute for the gas-company patrolman to gain such a customer since it would but mean a short pause in the routine work of covering his section.

A story has been told this journal concerning a small manufacturer, who obtained the energy to run his machinery from an isolated electricity generating plant which also furnished current for several arc lamps, which provided the illumination for his establishment. By a fortunate chance a gas-lighting salesman happened across the place at a time when its proprietor was considering the purchase of a new dynamo to furnish the additional power his increasing requirements demanded. The salesman proposed installing gas lamps, and doing away with the electric arcs and applying the current they consumed to running the machinery. The installation was made, and the saving in power proved more than sufficient for the manufacturer's needs.

Some would call this brilliant salesmanship. While conceding that alert salesmanship was involved, this journal would style it rather an exceedingly fortunate combination of circumstances.

Brilliant though the salesman may have been, his talents would not have availed him anything had not mere chance taken him to the factory at a propitious moment. With the gas-company patrolman it would have been but an incident in the day's work. If he was properly covering his territory he could not have failed to know of that man's problem. The installation would have followed as a matter of course.

These are but a few of a very large number of ways in which the patrol system would work to the advantage of the gas company. The organization of such a system would, in the opinion of this journal, bring quick returns and would do more towards popularizing gas than even extensive reductions in rates.

The Rate-Fixing Commission and Its Engineer

An interesting feature in regard to the valuation of the Springfield (Ill.) Gas Company property by the public utilities commission of that state is brought out in the note on the difference between the commission's valuation and that of Prof. E. W. Bemis, which is published in the news section of this week's issue. It appears that the commission, on a valuation that reached almost a million dollars, practically adhered to the valuation found by its gas engineer, the difference being only a matter of somewhat over six thousand dollars. This is most unusual, but it would be more to the credit of rate-fixing commissions in general if it were more frequent. This journal does not take the stand that all gas engineers of utility commissions are infallible—there are too many of the "so-called" variety in existence to make such a statement—with accuracy—but it does maintain that the average gas engineer is a great deal better qualified to make an intelligent estimate of the value of a gas property than is the average public utility commissioner. A little more reliance upon their engineers on the part of such commissioners would result in a considerably reduced number of unjust valuations.

Residence Streets Present the Most Important Problems in Street Lighting and Require the Most Intelligent Planning to Get the Best Results

The Auxiliary Appliance that Delivers as Much of the Light Flux as Possible on the Street Midway Between Lamps is Likely to be by Far the Most Economical for Most Conditions, and the Use of Proper Equipment of this Kind is Important

Residence streets constitute, by far, the greatest mileage and the most important problems in street lighting, and call for the most intelligent planning to get the best results on account of the small appropriations available. The auxiliary appliance, consisting of the globe reflector, etc., that delivers as much of the light flux as possible on the street, midway between lamps, but not beyond that point, is likely to be the most economical for most conditions, and the use of proper equipment of this kind is important. These points were brought out by J. R. Cravath, in a paper on "Recent Street Lighting Problems and Developments," presented before the Chicago Section of the American Institute of Electrical Engineers, the Chicago Section of the Illuminating Engineering Society and the Western Society of Engineers, in joint meeting at Chicago. The following has been abstracted from Mr. Cravath's paper:

Older Conception of Street Lighting Problems Still Exist in Minds of Some Engineers

In order to consider recent street lighting problems and developments in their proper light we must necessarily constantly refer back to the older conceptions of the street lighting problem, many of which older conceptions still exist in the minds of the lay public, and to some extent among the members of the engineering fraternity who have not closely followed street lighting matters.

Ideas as to the proper methods of rating lamps for street lighting have undergone radical changes along with our increase of knowledge as to the actual photometric performances of lamps and their accessories.

It is impossible to adopt any one rating that will properly value a lamp for street purposes as there are such varied conditions to be met on different kinds of streets. There is, however, substantial agreement among leaders in illuminating thought and practice that all lamps of whatever kind, whether for interior or exterior illumination should first be rated according to total lumens emitted; or upon what is the same thing differently expressed, viz., meaning spherical candlepower.

Important that Distribution of Light Flux be Such that as Large Percentage as Possible be Directed Where Most Needed

However, the rating of a lamp by total flux output in lumens of mean spherical candle power is now recognized as only the first step in ascribing the lamp a relative value for street illumination. It is important that the distribution of light flux be such that as large a percentage as possible is directed where it is most needed. The particular places where the greatest flux of light is needed or rather the particular angles at which the greatest flux should be emitted depends on the height and spacing of lamps and the nature of the roadway or pavement. In general, it is a safe rule to follow to get as much of the flux delivered midway between lamps as possible. It is conceivable that this might be overdone; but not with present appliances or under any common present conditions of street lighting practice.

Tests made by the street lighting committee of the National Electric Light Association and Association of Edison Illuminating Companies in 1914 and 1915, indicated that discernment of obstructions and obstacles along a street might be less with nearly uniform illumination coming from a number of sources than with less uniform illumination coming from a few larger sources. Conditions where an object can receive considerable light from a number of sources are only found on business streets and boulevards where the available expenditure per foot of street is much lighter than in residence streets.

Residence streets constitute the far greater mileage and the most important problems in street lighting, and call for the most intelligent planning to get the best results on account of the small appropriations available.

On such streets, there is no present danger that the uniformity of illumination or the multiplicity of light sources illuminating any one point will be so great that quick or easy discernment is less than it would be with a smaller number of large sources. In such locations the main question is how far can the lighting units be sub-divided and be kept within reasonable expense limits.

Along with Rating of Lamps Comes Question of Depreciation Under Actual Service Conditions

The auxiliary appliance (consisting of globe, reflector, or what not), that delivers as much of the light flux as possible on the street midway between lamps (but not very much beyond that midway point), is likely to be by far the most economical for most conditions, and the use of proper equipment of this kind is important. As a second step, therefore, in our process of rating illuminants we must consider the lamp as equipped with whatever auxiliary appliance may deliver the flux of light in proper proportion along the street for the given conditions in question.

Along with the rating of lamps comes the question of depreciation of the lamp under actual service conditions below the performance of the same lamp in the laboratory when new. This necessitates consideration of the actual blackening or fouling of globes in service and the amount that depreciation in service may be prevented by proper cleaning and maintenance.

This depreciation is much more serious than commonly supposed, and should be watched.

This brings us to the question of contract relations between lighting companies and municipalities, to insure proper maintenance.

The time honored form of contract is to stipulate a certain candle power of lamp to be operated according to a certain lighting schedule at a flat rate of so much per year. In some contracts this has been wisely modified to stipulate a certain type and kind of lamp with possibly some further stipulations as to operating conditions and maintenance. Maintenance stipulations in most contracts are decidedly weak.

Selling Street Illumination on Basis of Illumination Obtained on Vertical Plane Midway Between Lamps

It was at one time proposed, and in fact recommended, by the 1907 and 1908 committee on street lighting, of the National Electric Light Association, that street illumination be sold on the basis of the illumination obtained on a vertical plane about midway between the lamps. This recommendation, however, did not find favor in practice, and it is perhaps fortunate that it never did, as it confuses the question of lamps and systems of illumination in an undesirable way.

In 1913, a committee of the same association recommended that the desirable form of contract should specify definitely the kind of lamps and their performance, leaving the question of the proper spacing, equipment, height, kind of lamp, etc., to be determined in advance of the contract.

Under such a procedure the lighting company would contract to maintain and operate certain specified types of lamps up to a certain specified standard of service determined by candle power tests.

It might be specified that such tests be made on the streets or by removal of street lamps to the laboratory, and operating them in the laboratory under as nearly as possible actual street conditions.

Such contracts should not be entered into, however, without a full knowledge of the actual street performance of the lamps in question.

Extensive experience in checking street performance against the performance of new lamps in the laboratory causes me to urge extreme caution in this respect, as the discrepancies between these two performances are great in most cases. However, in some cases, the existence of street performance tests has had a very marked effect in improving maintenance conditions. This im-

provement has sometimes been fully equal to that of a much heralded improvement in efficiencies of lamps as accomplished by the manufacturers. Lamp efficiency, therefore, is both a manufacturing and an operating matter, and every large contract should have some check on maintenance.

Public Utility Commission Regulation

As to the broader economic aspects of street lighting contracts, there have been some interesting recent developments. Public utility commission regulation in many states has helped to remedy conditions of over-charge and under-charge for street lighting service. Assuming that a public utility commission does its duty in a theoretically perfect manner, municipalities should pay continuously the actual cost of street lighting service, including the depreciation caused by obsolescence of street lighting lamps and apparatus due to the rapid changes in the street lighting art. Such ideal conditions, however, have rarely been found in practice as yet, and most critics are paying too much or too little for such service.

The most important changes in our conceptions of what constitutes the real problem of street lighting have been left until the last.

How are lamps to be spaced, how high are they to be mounted, and how equipped as to globes and reflectors, to give the best discernment of objects along the street, with the best general appearance; or if the questions of easy discernment and pleasing appearance are not answered in the same way, what point of compromise shall be adopted?

An early idea was that the effectiveness of a system of street lighting depended mainly on the total candle power of the lamp placed along a street without much regard for the height, distance apart, equipment, or size of each unit.

Later, more scientific ideas were advanced, based on the illumination along the street.

Ten or fifteen years ago, vertical illumination was the chief thing considered in street lighting. Later horizontal illumination on the street surface received more consideration. All of the following have been proposed as criterions for the value of a system of street illumination:

Minimum vertical illumination between lamps.
Average vertical illumination.
Minimum horizontal illumination.
Average horizontal illumination.

None of the Criterions Proposed is Sufficient

None of these is sufficient and all of these together would be incomplete for the reasons given later, *but* if one is selected as a practical working measure for residence streets at the present time, minimum vertical illumination between lamps would probably be as good a criterion as could be established, and minimum horizontal illumination for business streets, but these are far from taking into account all of the conditions which influence clearness of vision. In the year 1910, two memorable contributions to the literature and knowledge of a street lighting were made. One of these by Preston S. Millar, before the Illuminating Engineering Society, showed that a considerable portion of our seeing by street lighting at night is by virtue of the silhouette effect, whereby objects are seen as dark silhouettes against a light surface background. Illumination of the street surface rather than the vertical objects on it is necessary for this.

The other contribution was by A. J. Sweet, in the Journal of the Franklin Institute, in which the blinding effects of glare were studied. The blinding effect of glare, that is, the effect of a row of lamps within the line of vision when looking along a street at night, renders ineffectual a certain percentage of the light expended upon the street for the purpose of illumination, because it decreases the ability of the eye to see. The existence of such an effect is easily demonstrated by anyone, but quantitative measurements of it were first published in 1910, as stated, and have since been studied in more detail by Mr. Sweet.

A Study of Silhouette Effect Leads to Interesting Results

We see objects along a street at night just as we see all objects at any time, namely, by virtue of differences in brightness and color of their surfaces. A study of silhouette effect in connection with this fact leads to some interesting results. As stated, a considerable portion of our discernment at night is by virtue of this silhouette effect. Fortunately, the reflection from paved surfaces is greatest at very oblique angles, so that, as shown by Millar, the brightness of a street surface is much more nearly uniform than would be indicated by a measurement of horizontal illumination. All this helps to make a uniform background for a silhouette effect.

The avoidance of glare effect (which in common past practice may easily be such as to call for from 1.2 to 1.8 times the illumination that would be necessary if glare were not present) is partially accomplished by increasing lamp heights. Good practice now mounts lamps from 16 to 25 and even 30 feet in height, where formerly heights from 10 to 14 feet were employed.

As to how far it is feasible to reduce the blinding effect of glare materially by the use of refractors which reduce the flux of distant lamps entering the eye, without too much darkening of the street surface between lamps, is a point upon which conclusive demonstration may be looked for soon. That a partial solution of the difficulty is feasible there is no doubt.

Sales of Industrial Appliances in Baltimore in Past Year Double Those of Any Preceding Year

The sales of industrial appliances made by the Consolidated Gas Electric Light & Power Company, of Baltimore, during the past year exceed by more than 100 per cent those of any preceding year.

New contracts for the domestic use of gas and electricity, as well as the sale of gas and electric appliances and motor trucks, have exceeded any previous year's business.

Northwestern University Offers Course In Public Utilities

The Northwestern University School of Commerce of Chicago announces the introduction of some new courses in its curriculum for the coming year, which include a course in Public Utilities; one in Public Service Corporation Accounting, in which a thorough study is made of the accounting principles in practice, applicable to Public Utility Corporations; one in the Social Aspects of Business; and one in General Psychology.

The school is planning for the registration of 1,000 evening students.

Red Key, Ind., Gas Company Dissolves After 23 Years in Business

Application has been made for the dissolution of the Citizens' Gas Company of Red Key, Ind. The company was organized 23 years ago by more than 300 stockholders at Red Key, to procure gas for stockholders at a minimum expense. For many years the charge was $1.25 per month for each consumer.

During the past few years the company has not been able to furnish enough gas to supply the stockholders. A few patrons of the company, living along the main feed line, have been able to get a little gas, but the service has been poor.

A receiver will be appointed and the business of the company will be closed. A number of the stockholders have moved from Red Key or have lost their stock certificates. They will probably realize $2.00 or $3.00 a share after the expenses have all been paid.

Louisville Gas Company Shows Increased Output Over Last Year

The gas output of the Louisville (Ky.) Gas & Electric Company for the week ending Aug. 5, was 21.1 per cent greater than for the corresponding week in 1915. Thirty-seven gas-heating installations were sold during the week.

Differential Rate Schedule Increase Annual Gas Consumption By Industrial Consumers in Baltimore 55,578,700 Cu. Ft.

Company has Added 21 Miles of Mains to Distribution System and has Installed 3,214 New Services—Low Rates, Heating Value Standard and Large Volume are Cited as Elements of Stability in the Company's Gas Business

The industrial fuel business of the Consolidated Gas Electric Light & Power Company of Baltimore, has been increased to the extent of 55,578,700 cu. ft. under the stimulus of the differential rate schedule established last year according to the annual report of Herbert A. Wagner, president of the company, who names as the elements of stability of its gas business: Low rates, the heating value standard and large volume. The following notes have been abstracted from the report.

In January, the single heating value standard of quality of gas (600 B. t. u.) established by the State Public Service Commission became effective coincident with a reduction of five cents per thousand cubic feet, making the maximum domestic rate 75 cents per thousand. The gas rates of the company for industrial, commercial and domestic purposes are now on a most favorable basis, and tend to encourage and stimulate the unrestricted use of gas for diversified purposes. It is interesting to note that the stimulation of the industrial use of gas under the differential rate schedule established last year is well shown by the increase of consumption by industrial consumers of 55,578,700 cu. ft. or 36½ per cent. The principle of differential gas rates has now been extended to domestic and commercial, as well as industrial, consumers, and provides for a rate of 35 cents per thousand cubic feet for all gas used in excess of a domestic consumer's use in the past, or beyond a certain consumption based on the number of rooms in the house.

Substantial Growth in Gas Operations Shown in Comparison of Sales for 1915 and 1916.

The substantial growth in the gas operations of the company is shown in the following comparison:

Gross Income from Sale of Gas..... 1916	1915	Increase	Per Cent Increase
$3,459,870.81	$3,374,915.67	$84,955.14	2.5
Total Sales—Cu. Ft..... 1916	1915		
4,504,573,000	4,199,790,500	304,782,500	7.3
Customers..... 1916	1915		
126,550	121,866	4,684	3.8

A large amount of gas may be disposed of for house heating purposes without increase to the company's present investment in gas holders, distribution systems, services, etc. The climate in Baltimore is favorable for such use of gas, and it has been found that this field of expansion of the business of the company offers great possibilities. A number of house heating installations are now being made.

Low rates, the heating value standard and large volume are the elements of stability in the gas business of the company.

Necessary extensions to the purifying plant at Spring Gardens were made to provide for the increased volume of coke oven gas received, and some auxiliary apparatus has been installed in connection wth the water gas equipment for the purpose of increasing the efficiency of the plant. No gas producing apparatus has been added during the year, but the very considerable increase in sales requires that such additions be made during the coming year. The materials for the manufacture of gas have been purchased under fair and favorable contracts and economically used, resulting in a satisfactory cost for the production.

New Mains Added to Distribution System

The gas distribution system of the company has been fully maintained while responding to the extensive demands made upon it during the past year. There have been added 21 miles of mains and 3,214 new service pipes, making totals of 754 miles of mains and 122,258 service pipes in use at the end of the fiscal year. Satisfactory progress has been made with the installation of the large feeder mains running from the works which are intended to meet the growth anticipated in the near future, with the assurance of providing the best possible service to the entire territory served by the company. Consistent with the company's policy of obviating as far as possible the necessity of making openings in improved paving, there were 26 miles of mains examined, and renewals and repairs to mains and service pipes made where necessary in advance of public improvements.

The adequacy of the distribution system is exemplified by the uniform pressure which has prevailed throughout and which is maintained within narrow limits of variation.

The excellent physical condition of the distributing equipment is evidenced by the continual low percentage of leakage or unaccounted-for gas which has been maintained, a condition noteworthy in view of the vast amount of sub-surface construction work which has been in progress during recent years throughout the city.

Mutualizing Interest of Company and Its Customers

The plan inaugurated last year to mutualize the interests of the company and its consumers through the sale of common stock, on deferred payments of $4 per share per month, is still effective, and the results are satisfactory. On June 30, 1,257 consumers were purchasing 6,363 shares, the aggregate purchase price being $686,774. The initial subscribers under this plan will have paid for their stock in full in July of next year, at which time full-paid certificates will be delivered; meanwhile, as payments continue, interest is allowed at the rate of 6 per cent. per annum, compounded quarterly.

The ownership of the Company's shares by employees is steadily increasing, principally through the operation of the Employees' Savings Fund referred to in the Annual Reports of 1914 and 1915. There are 532 employees, or 19.3 per cent. of the total employed, regular depositors into the Fund, their deposits ranging in amounts from 25 cents per week upward, to be ultimately applied to the purchase of the Common shares of the Company.

The company's new twenty-story office building, now nearing completion, was financed through the formation of a subsidiary company, The Public Service Building Company, all of the common stock of which is owned by the company, which has leased the entire building, and as rental therefor has undertaken the obligation of interest on $800,000 5 per cent bonds, and to pay dividends at the rate of 6 per cent per annum on $600,000 preferred stock. It is expected that the centralization of the many departments of the company under one roof, in lieu of the many buildings now occupied, will result in marked economies. The construction work of the building was begun Dec. 1, 1915, and it is expected that it will be ready for occupancy about Nov. 1 of this year. The com-

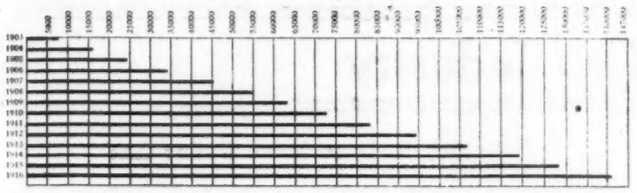


CHART SHOWS INCREASE IN NUMBER OF RANGES AND WATER HEATER INSTALLATIONS

pany will occupy less than one-half of the building at the outset, and the balance of the space will be available for tenants.

Welfare Work

Much has been accomplished during the year in the interest of stronger personnel among the company's forces. Some five hundred employees, during the past Winter, have engaged in educational work, of whom some two hundred have taken educational courses at a number of local institutions, through the company's classes and by correspondence, the work being done on the individual initiative of the men, they selecting their courses under the guidance of a committee of superintendents, lowest cash prices being obtained for the courses, and the men repaying the company by installment for advances made. Refunds within specified limits were made by the company to those completing courses with a grading of at least 80 per cent.

During the year the company has continued its payment of service annuities under the pension plan.

Medical examination and visiting trained nurse service has been determined upon in the interest of employees' health and efficiency.

On the occasion of the American Gas Centenary, June 16, 1916, there was announced to employees a plan of sick benefits and death benefits for all grades of employees, provided at the expense of the company on an equitable plan, which should stabilize employment of worthy members of the force through a graduated plan of payments according to length of service.

This welfare work is being conducted in the interest of a better trained, better fitted and more efficient working force, and the company is taking a leading place among employers in its progressive plans for improved personnel.

Public Policy

The company has made friends of the people of Baltimore. The plan on which it has been conducting its business has won for it commendation on all sides.

It has taken active interest in the development of new industries and in bringing new capital to Baltimore, and its efforts are considered to have had a material effect on the city's growth and welfare.

These and other activities of the company in the way of cooperation with the public have brought greater results during the past year than ever before.

Gas Man Should Be Thoroughly Familiar with Available Appliances for Utilizing His Product

By A CORRESPONDENT

If the general public possessed one-half the amount of knowledge regarding the available appliances for using gas, and the numerous advantages of gas for the specific purposes such appliances are designed for, as this journal could obtain by writing letters to ten gas engineers selected off-hand, the total annual send-out of gas in this country would be vastly greater. But the public does not possess even a small fraction of this knowledge. In fact, modern gas appliances are to the layman very much of a mystery. Occasionally someone visiting a gas company office to pay his bill, or for some other purpose, happens across some gas fixture that will permit him to use gas for some purpose he has had in mind for some time, but which he had not thought he could adapt gas to. The discovery comes as a revelation.

The need of making the public familiar with the available gas-burning fixtures is one of the most pressing needs of the industry to-day, and is one in which the most earnest endeavors of the gas companies should be freely expended.

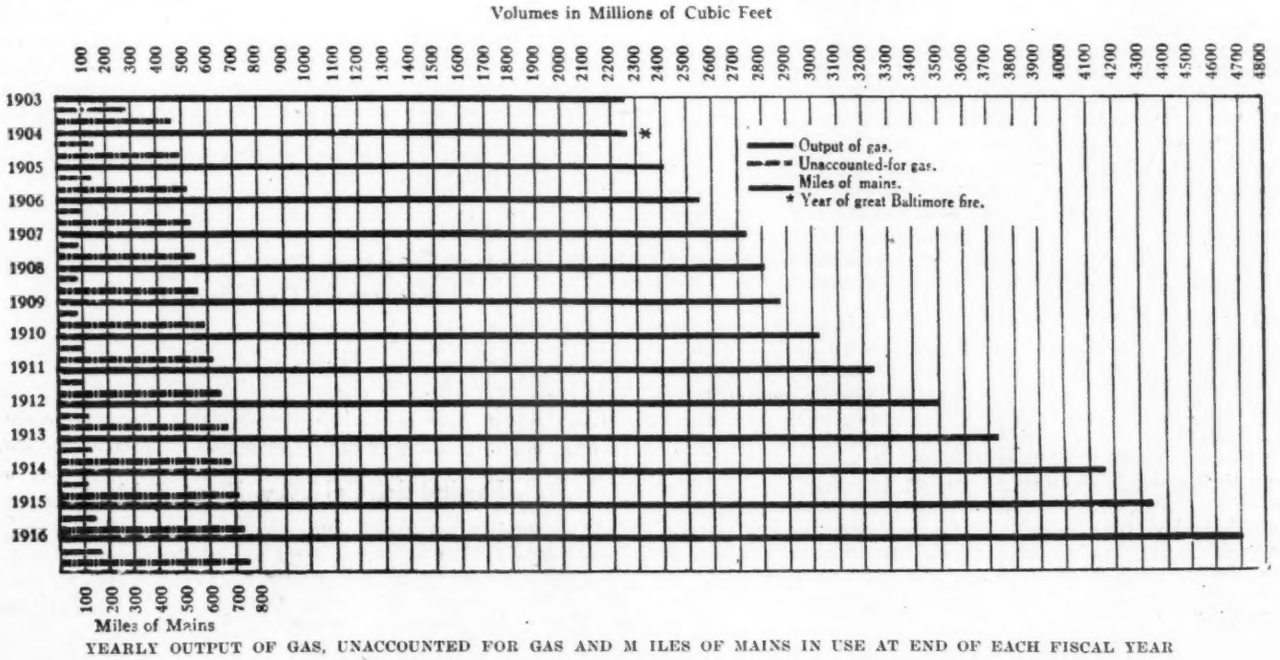
The primary step is first to educate all company employees in the matter. A vast amount of information can be disseminated from word of mouth. By all means the gas man himself should be thoroughly informed not only in regard to the fixtures and appliances his company has on exhibition, or for sale, but in regard to all that are available throughout the country as well.

If a householder should complain to the meter reader of the inconvenience and uncertainty of his coal-burning heating system, the reader would then have sufficient knowledge at his finger tips to point out to him the advantages of gas and how it might be applied.

Think of the countless opportunities that exist in this one field alone.

Thousands of city workers have homes in suburban sections. The men have to depart earlier to their work than do their less expansive fellows who reside in city apartments. They return later in the evening. A large proportion of them have neither the time nor the inclination to attend to their own furnaces. These men make arrangements with some individual who makes a business of such matters. This adds to the cost of the coal-burning system. Great strides could be made in the matter of increased output by merely informing this class that there is such a thing as an efficient gas fired heating system.

The class of employees mentioned, if they possessed it in more than a merely casual manner themselves, could effectively spread this knowledge. Heater advertisements on the backs of bills would materially assist in the campaign. Advertisements in non-technical periodicals of National circulation should be used to facilitate the work on a broader scale.



YEARLY OUTPUT OF GAS, UNACCOUNTED FOR GAS AND M ILES OF MAINS IN USE AT END OF EACH FISCAL YEAR

News of the Gas Industry

Start Coal-Gas Plant at Waterville, Me.

The Kennebec Gas & Fuel Company started its new coal-gas plant at Waterville, Me., in operation, Aug. 19.

New Plant at Davenport, Iowa, Put in Operation

The new gas plant of the Iowa Public Service Company at Davenport, Iowa, was put in operation Aug. 22.

Gas Lamps Transform Woods into a Bower of Light

A jubilee was recently held at the West Jersey Camp Grounds near Malaga, N. J., to celebrate the lighting of the 80 gas lamps, installed at a cost of $1,000, which transformed the woods into a bower of light.

Richmond, Va., Wants Lower Gas Rates

The City of Richmond, Va., has filed with the railroad commission a complaint against the rates charged for gas.

The Pacific Gas and Electric Company charges $1.25 per 1,000 feet for gas with a monthly minimum rate of 50 cents.

Taxation and Industrial Expansion

Probably the most difficult task that confronts a governing power is to raise and properly apportion the taxes necessary to carry on government. There might be added to this the statement that probably in no other country throughout the world does it cost so much per dollar, *per capita,* to raise and spend taxes, as it does in the United States.

The confusion of our tax laws reflects upon the industries. Countless questions arise in regard to the enforcement of tax laws in the sovereign states. The inheritance tax on real estate is due in the state where located. Where personal property is owned in a foreign state it has been held to follow the residence of the owner. But numerous states have held it subject to taxation in the state where located, thus subjecting the same property to double tax. The Federal inheritance tax would hit this property in one state or the other, thus subjecting it to triple taxation. There is an actual instance in which railroad stock of a decedent was subject to the tax in Wisconsin because that was the state of his residence; in Illinois, because the stock was in a safety deposit box in Chicago; and in Utah, because the railroad company was a Utah corporation. In such a case would a Federal tax levy a further contribution?

Under the guise of taxation for revenue, our domestic business interests have been made to pay a large share of the high cost of political government. Patronage, political expediency and so-called national needs, are the weapons through which millions of dollars in tax payments are annually taken from our industrial enterprises. In this way American industry, which is of the people, by the people and for the people, has been compelled to pay tribute to those who have been allowed so to abuse the legislative powers placed in their hands by a none too careful citizenry.

Much has been heard in recent years of economy in government, but to date no real exhibition of this approved theory has been translated into practice. Indeed, while the discussion over the need of governmental thrift has been most intense during the past ten years, the more practical politicians have succeeded in having enacted a constantly increasing number of burdensome tax laws.

One of the direct results of the race between Federal, state and local tax assessors is that in some of the leading industrial districts many plants have been moving from one state to another. There are instances where plant owners, finding it impracticable to close down their plants in one state and re-open in another, have adopted the alternative of transferring their charters of incorporation to more favorable states, so as to escape paying exorbitant and unreasonable taxes or other forms of state fees, for the privilege of doing business and incidentally (so it seems) contributing to the prosperity of a given community.—*M. J. Hickey in American Industries.*

Newport, R. I., to Have Dollar Gas

Judge John C. Burke, attorney for the city of Newport in the case against the Newport Gas Light Company for a reduction in gas rates, has filed with the Rhode Island Public Utilities commission a contract made between the city of Newport and the Newport Gas Light Company, reducing the price of gas to $1 per thousand net, asking that the utilities board permit the signing of the contract and the discontinuance of the investigation sought by the city upon the adoption of the new rate. The agreement calls for the new rate to go into force Oct. 1, provided the utilities board approves it. The petition is also signed by Burdick & MacLeod, attorneys for the Newport Gas Light Company.

Difference in Valuation of Springfield Gas Company Over Professor Bemis' Figure Greater Than Stated

It has been called to the attention of this journal that the difference in valuation of the property of the Springfield (Ill.) Gas Company, set by the public utilities commission of that state, over the figure of Prof. E. W. Bemis, was even greater than that given by the Lone Star Gas Company in its advertisement in a Dallas, Texas, newspaper, which was reproduced on page 124 of the Aug. 21 issue of the AMERICAN GAS LIGHT JOURNAL. The value found by the commission was $800,000 instead of $744,000, as was stated.

An interesting feature in connection with this valuation was the closeness with which the commission adhered to the valuation found by A. S. B. Little, its gas engineer. Mr. Little's valuation was $806,104.

Municipal Supervision of Gas Piping Discussed at Worcester, Mass.

The subject of municipal supervision and inspection of gas piping, which will create the position of gas pipe inspector was brought up for discussion at hearing on building ordinances before the special ordinance commission of Worcester, Mass., on Aug. 16.

Dana D. Barnum, president and general manager of the Worcester Gas Light Company, told the commission, the builders and architects present that the gas company formerly made inspection of gas piping, but found that it had no authority in the matter, so discontinued the practice and in the three years since it was stopped there has been an increase of 50 per cent in the number of gas leaks reported.

He was in favor of municipal authorized inspection and regulation of the installation of gas pipes.

Eight Hundred Taxpayers Petition City to Take Over Estherville Gas Plant

Eight hundred taxpayers of Estherville, Iowa, have petitioned the city to take over the franchise and property of the gas plant, the stoppage of construction on which was noted some weeks ago in this journal.

Escondido, Cal., Gas Plant Sold

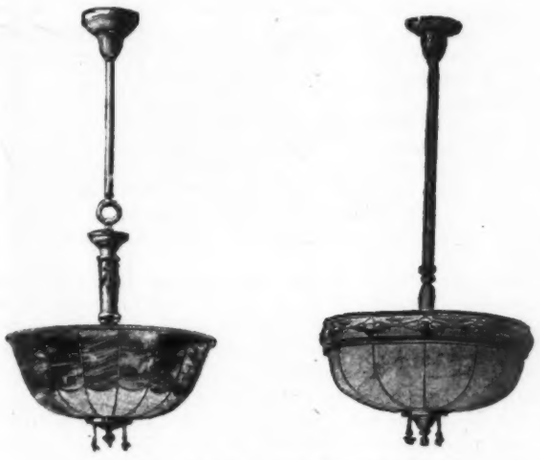
At an auction conducted Aug. 12, by the Los Angeles Trust and Savings Company, trustee, the plant of the Escondido Utilities Company, making gas and electric current, was sold for $10,000 to Miss Mary K. Wohlford, a daughter of A. W. Wohlford, president of the Escondido National Bank.

Start Construction on 2,000,000-Cu. Ft. Holder

The Stacey Bros. Gas Construction Company of Cincinnati, Ohio, has started construction on the new 2,000,000 cu. ft. 4-lift holder for the San Antonio Gas & Electric Company of San Antonio, Texas. This is believed to be the second largest holder being constructed during the present year.

A Twist of the Wrist Removes the Bowl on New Gas Lamp

A new gas fixture has recently been placed on the market by Bayley & Sons, Inc., designers and makers of gas lighting equipment, of 101 Park Ave., New York City, in which the bowl can



TWIST OF THE WRIST REMOVES DISK

be removed by a mere twist of the wrist. Other features of the lamp are: All parts interchangeable, and individual key and pilot control.

Auburn Junction, Ind., Plant to be in Operation Oct. 1

Fires have been lighted in the new furnaces of the Indiana Fuel & Light Company, at Auburn Junction, Ind., and it is expected that the plant will be in operation by Oct. 1.

The process of drying will continue for sixty days, after which the plant will be ready to be placed in operation. The new gas holder which has a capacity of 200,000 cu. ft. will soon be completed. Connections for gas are being made rapidly and it is expected that the plant will be in operation by Oct. 1, after which the old plant will be dismantled.

Corrections

In the article on the gas engineering courses at the University of California, which was published on page 127 of the Aug. 21 issue of this journal, the lecture on "The Chemistry of Gas Manufacture" was credited to E. C. Jones. The lecture was delivered by Frederick C. Jones, chief chemist of the Pacific Gas & Electric Company.

On the same page in the same number it was stated in the heading of an article that the Improved Appliance Company had established a boiler furnace department. It is the Improved Equipment Company of 60 Wall Street, New York City, which has established such a department.

Brown Instrument Company to Open Detroit Office

The Brown Instrument Company of Philadelphia, Pa., will open their new offices in Detroit on Sept. 1. They will be located at 612-613 Chamber of Commerce Building. Mr. William Printz, formerly assistant sales manager, will be in charge.

Incorporate New Company Manufacture By-Product Coke

The Champion Gas Coal Company of Pittsburgh has been granted a charter of incorporation by the Pennsylvania State Department at Harrisburg. The Company has a capital of $50,000. The incorporators are Charles S. Bygate, 5435 Baywood street; J. Fred Kurtz, Connelsville, Pa., and H. A. Davis, Washington, Pa. The company will mine coal and manufacture coke, gas and kindred byproducts.

Societies and Associations

THE MICHIGAN GAS ASSOCIATION has issued the official program for its annual meeting to be held at Detroit, Sept. 20-29. On the evening of the first day a general good fellowship assembly will be held in the hotel lobby from 7 to 9 p. m The sessions will be started at 9:30 a. m., sharp on the following day. After the presidential address by Burton Laraway, the following papers will be presented:

HEAT TREATMENT OF BRASS IN NEUTRAL AND REDUCING ATMOSPHERES, by ALFRED H. WHITE, and BERT A. STANDERLINE.

THE INFLUENCE OF GASES WITHIN THE KILN ON BAKING JAPANS, by ALFRED H. WHITE, and JOHN T. NAYLON.

THE WEATHERING OF GAS COALS, by ALFRED H. WHITE.

LABOR SAVING BENCHES FOR MEDIUM SIZED GAS WORKS, by H. W. DOUGLAS, manager, Washtenaw Gas Company, Ann Arbor.

Under the heading of An Hour with the Michigan Manufacturers, the following 15-minute addresses will be heard:

PRESENT AND FUTURE MANUFACTURE OF WATER HEATERS, by F. A. LEMKE, secretary and treasurer, Humphrey, Manufacturing Company.

PRESENT AND FUTURE MANUFACTURING OF HOTEL RANGES, by L. B. YOUNG, general manager, Michigan Stove Company.

PRESENT AND FUTURE MANUFACTURING OF GAS LIGHTING, by W. M. BLINKS, assistant secretary, General Gas Light Company.

PRESENT AND FUTURE MANUFACTURING OF DOMESTIC GAS RANGES, by HARRY SCHALL, assistant to vice-president, Detroit Stove Works.

At 2 p. m. on Sept. 21, the Steamer Brittania will leave the foot of Bates Street for St. Clair Flats, chartered for the Michigan Gas Association. Outing, deck sports, amusements, dancing and supper aboard, returning when every one agrees. Auto conveyance will be provided from the Statler Hotel to the boat. At the morning session on Sept. 22, the following papers will be presented:

THE IMPORTANCE OF SIZING EQUIPMENT AS APPLIED TO THE SALE OF COKE IN SMALL TOWNS, by E. C. CAMPBELL, manager, Benton Harbor-St. Joseph Gas Company.

INCLINE OVENS, by F. REMINGTON, superintendent, Calhoun Gas Company.

JAPANNING OVENS—GAS VS. ELECTRICITY, by HOMER HOOD, of Industrial Department, Detroit City Gas Company.

REPORT COMMITTEES—1917 OFFICERS—TIME and PLACE of MEETING.

In the afternoon there will be a special outing for the ladies including a trip to Grosse Pointe, and tea at the Country Club.

THE PACIFIC COAST GAS ASSOCIATION has arranged the following program for its twenty-fourth annual convention which will convene at Santa Barbara, Cal., Sept. 19, and will durate until Sept. 22. The following is a list of the addresses which will be made and of the names of the speakers:

President's Address ..... F. A. Cressey, Jr.
Preparation and Use of Iron Oxide for Gas Purification, E. S. Jones
Equitable Gas Rates ..... S. Waldo Coleman
Where We stand in Rate Making for Gas or Electricity, J. M. Spitzglass
Up-to-the-Minute Selling Methods ..... S. C. Bratton
Analyzing the Cost for Supplying Artificial Gas, W. G. Vincent, Jr.
Efficiency Methods in Gas Utilities ..... E. L. Hall
Purchasing ..... N. L. Morse
House Warming ..... H. P. Pitts
Commercial Problems of the Day ..... F. S. Wade
Wrinkles ..... F. S. Wade
Experiences ..... John Clements
Facts and Figures in Gas Distribution .. D. E. Kepplemann

The headquarters at Santa Barbara will be at the Hotel Arlington, where suitable accommodations have been provided for the meeting place, the novelty display, and the banquet will be held. The latter will be held, Sept. 21, at 7 p. m. On the night of the banquet the ladies will be tendered a theatre party. On an appointed afternoon a tea and bridge party will be given for the benefit of the ladies. The general outing of the Association will be held Sept. 22, and will be in the nature of a genuine Spanish Barbecue, which will be held about five miles from town under the majestic oak trees and served by Spanish girls in native costume. Henry Bostwick, of 445 Sutter St., San Francisco, is secretary of the Association.

THE ILLUMINATING ENGINEERING SOCIETY will offer the following entertainment features at its annual convention, to be held in Philadelphia, Sept. 18-20. On the first day a luncheon will be served to visiting ladies at a suburban country club, following an automobile tour through the parkways of the city. In the evening, following the reception to Dr. C. P. Steinmetz, a piano recital and dance will be held. On the following afternoon, an automobile trip for the visiting ladies has been scheduled through suburban Philadelphia to the Valley Forge National Park. Dinner will be served at the Washington Inn, Valley Forge. The banquet of the society will be held Tuesday evening in the Rose Garden of the Bellevue-Stratford. Opportunities will be provided for visiting the numerous places of historic and educational interest. Registration of delegates and guests will open at 9.00 a. m., Sept. 18, in the Bellevue-Stratford Hotel. The following is a brief program of the sessions:

Sept. 18—	9:00 a. m.	Registration
	10 a. m. to 12:30 p. m.	Opening Session Address of Welcome Response President's Address Committee Reports
Sept. 19—	9:30 a. m. to 12:30 p. m.	Papers
	2:00 p. m. to 5:00 p. m.	Papers
Sept. 20—	9:30 a. m. to 12:30 p. m.	Papers Closing of Convention

THE EMPLOYEES OF THE OLD COLONY GAS COMPANY held their annual outing at Hatherly Inn, Scituate, Aug. 26. About 60 members of the force were in attendance. The trip to Scituate was made by automobile and on the return a stop was made at Nantasket Beach, where Superintendent of Works, Chas. M Lang, won so many "teddy bears" that he was barred from further target practice. Altogether a very enjoyable day was spent and the Outing Committee, Messrs. Gardner, Birnie and Rankin, are to be congratulated on the success of their efforts.

Personal Notes

H. S. BATCHELDER has been appointed commercial manager of the Western States Gas & Electric Company of Stockton, Cal.

C. H. STANNARD, secretary of the Denver Gas & Electric Light Company, was recently appointed to the committee of Traction matters of the Denver Civic Association.

O. L. BREHM, formerly in charge of street construction for the Decatur Railway & Light Company of Decatur, Ill., has been appointed to have charge of all outside construction work for the Jacksonville Railway & Light Company, of Jacksonville, Ill., succeeding William Crane.

ERNEST W. ALLEN, for several years connected with the Lynn Gas & Electric Company, of Lynn, Mass., is a candidate for office as a State Representative from the Essex District.

Construction Notes

BANNING, CAL.—The Riverside County Gas & Power Company has purchased the Banning and Beaumont gas plants and distributing systems. The plant at Beaumont will be rebuilt and the gas supply manufactured at that place, and a high pressure line will be laid to Banning to feed the distributing system. The old gas companies retain an interest in the new company, which has the following officers and directors: President, N. W. Farr; secretary, Farr McComb; vice-president, D. H. Gates; secretary and manager, F. N. Hawes, K. R. Smoot; treasurer, E. D. Reynolds; comptroller, First National Bank of Banning. H. W. Burkhart, is engineer.

PETALUMA, CAL.—Work has been started by the Pacific Gas & Electric Company on its new pipe line from Petaluma to Cotati, a distance of eight miles. It is a four-inch main to replace the present two-inch line from Petaluma to Cotati.

WATERBURY, CONN.—The Waterbury Gas Light Company has applied for permission to lay gas mains and service pipes on Irion, Ives, Wood, Carpmill and Oak Streets. Permission was granted to do the work on Wood, Irion and Oak Streets, but was held up on streets that have not yet been accepted by the city.

CARBONDALE, ILL.—Work on the construction of the new gas systems in Carbondale and vicinity will be started in the near future.

SHELDON, IOWA.—The Sheldon Gas Company has been organized with a capital of $40,000. E. P. Ilten, of Minneapolis is president; D. A. Frerichs, vice-president; William Glann, secretary-treasurer. The contracts have already been let for the erection of buildings, construction of tanks and mains. The cost of the plant will be about $50,000.

BELMAR, N. J.—At a council meeting held Aug. 22 the gas and water main regulations were passed. The construction of the mains is to be completed previous to starting work on the brick pavement in Main Street.

FAIRPORT, N. Y.—The citizens of Fairport voted in favor of granting a franchise to the Despatch Heat, Light, and Power Company to construct a distribution system in the streets of the village. The work must be completed within eighteen months from the time the franchise is granted.

SANDUSKY, OHIO.—It has been announced that the gas company and the New York Central Railroad has come to an agreement regarding the location of the eight-inch gas main that runs under the railway tracks at the site of the Camp St. subway. Before the subway operations can be started, the main will be removed.

OKLAHOMA, OKLA.—The Oklahoma Gas and Electric Company has been ordered to extend its gas mains in the alley between Park Place and Eleventh street, between Bath avenue and Kelham avenue and on Park Place from Kelham to Missouri avenue.

LEBANON, PA.—George S. Speaker, general manager of the Lebanon Gas & Fuel Company, has announced that the Henry L. Doherty Company, the holding concern of New York City, has authorized improvements at the Lebanon gas plant to cost $10,000. The plant will be modernized, and one mile of new gas mains will be laid in the northern section of the city.

NORRISTOWN, PA.—Gas mains are being extended from Norristown to Jeffersonville.

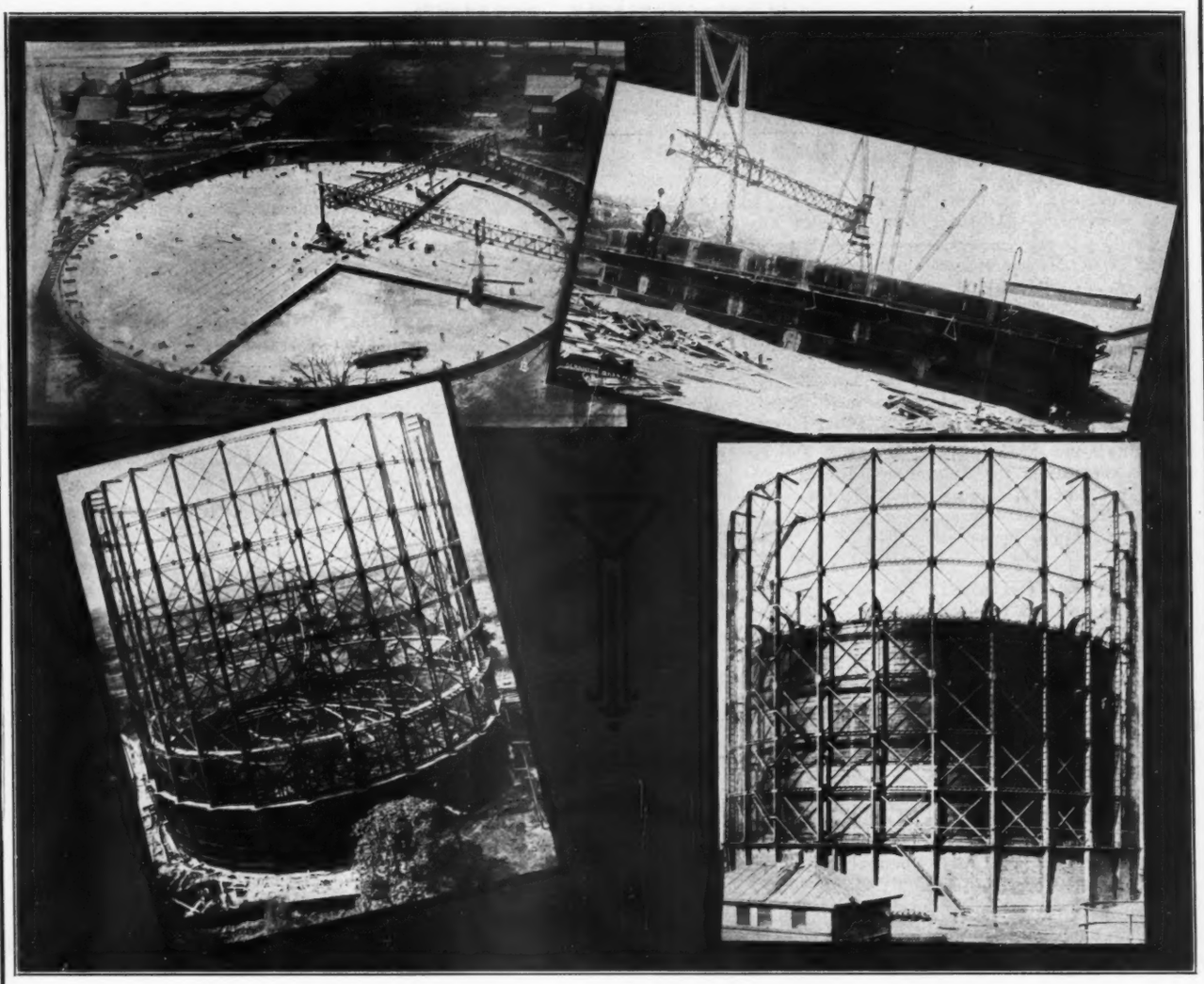
Recent Patent Issues.

Prepared for the AMERICAN GAS LIGHT JOURNAL by ROYAL E. BURNHAM, solicitor of patents and counselor in patent causes, 833 Bond Building, Washington, D. C., from whom illustrations and specifications of any patent mentioned below may be obtained for 20 cents.

1,195,491: MANTLE HOLDER OR PACKAGE. Sidney Mason, Philadelphia, Pa., assignor to Welsbach Light Co., Gloucester City, N. J.

1,195,631: APPARATUS FOR INDICATING THE VOLUMETRIC FLOW OF A GAS. Ernest E. Werner, Indianapolis, Ind.

1,195,934: PROCESS OF GENERATING TARLESS GAS. Henning F. Wallman, Chicago, Ill., assignor of one-half to Adelheid Wallman, William R. Wallman, and Henning H. Wallman, same place.



RITER-CONLEY COMPANY

STEEL CONSTRUCTION

PITTSBURGH

HELME & McILHENNY

1339-1349 Cherry St., Philadelphia, Pa.

ESTAB. 1848 H & McI High Grade Meters

GAS METERS

HINMAN DRUM STATION METERS, FOULIS GAS GOVERNORS

PREPAYMENT METERS

REPAIRING AND CONVERTING

PROMPT SHIPMENTS - - - - - CORRESPONDENCE SOLICITED

Financial Notes.

THE ARKANSAS VALLEY RAILWAY, LIGHT & POWER COMPANY reports gross earnings for July amounting to $102,893, increase $9,855; net after taxes $45,812, increase $6,315; twelve months gross $1,225,795, increase $70,349; net after taxes $541,152, increase $64,366.

THE BRAZILIAN TRACTION, LIGHT & POWER COMPANY earned, in year ended Dec. 31, 1915, 4.52 per cent on common stock, against 6.65 per cent in previous year. Total revenue $5,612,876, decrease $2,445,937; balance after preferred dividends $4,794,802, decrease $2,271,730; surplus for year $545,422, decrease $263,991. Total surplus at beginning of 1916, $4,367,832, against $3,822,410 at beginning of previous fiscal year.

THE UNITED LIGHT & RAILWAYS COMPANY reports combined gross earnings of subsidiaries for year ended July 31, as $6,692,515, increase $538,313; net after taxes $2,670,143, increase $284,869; surplus after charges $1,272,307, increase $239,128.

THE PENNSYLVANIA CENTRAL LIGHT & POWER COMPANY reports gross earnings for July, amounting to $98,121, increase $28,914; net $39,343, increase $10,783; surplus $15,995 against $1,277 in July, 1915. Seven months, gross $1,037,450, against $818,944 in same period of 1915; net $448,938; increase $80,969.

THE NORTHERN CALIFORNIA POWER CONSOLIDATED COMPANY reports gross earnings for twelve months ended July 31, amounting to $838,525; net $498,005; surplus after charges $141,443, and balance after depreciation $112,708.

THE CITIES SERVICE COMPANY executive committee will recommend to the board of directors that privilege of depositing Toledo Traction Light & Power Company stocks in exchange for Cities Service Company securities, which expires Sept. 1, be extended until Sept. 15.

THE NORTHERN STATES POWER COMPANY which some time ago inaugurated plans of selling its stock on partial payment plan to its customers, announces that the scheme has met with public favor. During June and July, Northern States Power customers purchased $31,000 of stock among 135 customers.

THE OHIO UTILITIES COMPANY, recently organized with a capital stock of $500,000, has applied to the Ohio Public Utilities Commission for authority to purchase Circleville Light & Power Company, Gallipolis Electric & Power Company, Delaware Electric Light, Heat, & Power Company, and Chillicothe Electric Railroad, Light & Power Company. Prospective selling companies joined in application. The total cost of properties will be $972,800, which sum, together with $27,200 for working capital and $50,000 for extensions, it is proposed to raise by issuance of $750,000 6 per cent first mortgage bonds, $200,000 preferred stock and $100,000 common stock.

THE BLACKSTONE VALLEY GAS & ELECTRIC COMPANY reports a quarterly dividend of $2 on their common stock, payable Sept. 1, as registered Aug. 23.

THE CONSOLIDATED GAS, ELECTRIC LIGHT & POWER COMPANY has completed details of new financial plan which will be announced in the near future. It provides for future financing of the company through the sale of common stock.

THE OHIO CITIES GAS COMPANY reports net earnings for July, amounting to $140,690.01, compared to $30,496.08 for July of last year, an advance of $110,193.93; while for the four months ending July 31, net earnings were $632,576.27, compared to $224,288.68 for the corresponding period last year, an advance of $408,287.59.

THE CENTRAL MAINE POWER COMPANY OF AUGUSTA, which does a gas business in a part of its territory, has been authorized by the Public Utilities Commission of the state to issue $317,000, par value, in 30-year first-mortgage bonds, at not less than 93.5 and accrued interest. The proceeds are to be used to pay for extensions to plant made between Jan. 1, 1915, and Aug. 1, 1916.

THE MASSACHUSETTS GAS COMPANY report combined net available for dividends of subsidiaries for July as $224,305; increase, $24,293, or 12.15 per cent., compared with July, 1915.

THE DAYTON POWER & LIGHT COMPANY reports gross earnings for July amounting to $116,896; increase, $40,864. Operating expenses, $75,094; increase, $34,363. Net earnings, $41,801; increase, $6,580. Net income, $23,088; increase, $5,922. Surplus, $8,256; increase, $1,628.

THE UTAH SECURITIES CORPORATION reports, for July, gross from operation of subsidiaries, $464,549; increase, 12 per cent. Net, $245,790; increase, 19 per cent. Gross for year ended July 31, $5,243,940; increase, 13 per cent. Net, $2,872,269; increase, 25 per cent.

THE COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY reports, for year ended July 30, balance after preferred dividends of $1,604,553, equivalent to $8.72 on common stock. July gross was $1,379,361, increase, 13 per cent; balance after expenses, charges and preferred dividends, $110,048, an increase of 33.1 per cent.

Current Prices of Public Utility Securities.

	Bid	Asked
Adirondack Elec. P.	26	28
Adirondack Elec. P. pf.	78	81
American Gas	120	123
*American Gas & Electric	153	156
*American Gas & Electric pf.	49	51
American Light & Traction	380	384
American Light & Traction pf.	109	111
American Power & Light	70	72
American Power & Light pf.	84	86
American Public Utilities	42	47
American Public Utilities pf.	73	76
Amer. P. & L. Corp. pf.	92½	95
Amer. Water W. & Elec.	7¾	8¾
Amer. W. W. & E. part'g pf.	21	24
Amer. W. W. & E. 1st pf.	61	65
Carolina Pow. & Lt.	27	30
Carolina Pow & Lt. pf.	97	100
Cities Service	275	278
Cities Service pf.	87½	88½
Colorado Power	24½	26½
Colorado Power pf.	99½	101½
Commonwealth, Pr. Ry. & Lt.	62	64
Commonwealth, Pr. Ry. & Lt. pf.	83	85
Denver Gas & Electric gen 5s	96¾	97¾
Electric Bond & Share pf.	100	103
Empire District El. pf.	88½	92½
Federal Light & Traction	10	13
Federal Light & Traction pf.	45	48
Gas & Electric Securities	290	—
Gas & Electric Securities pf.	95	100
Northern States Power	86	88
Northern States Power pf.	96	97½
North Ont. Lt. & P.	15	18
Ozark Power & Water	43	46
Pacific Gas & Electric	58¾	59
Pacific Gas & Electric pf.	90	91
Republic Ry. & Light Co.	37½	38½
Republic Ry. & Light Co. pf.	74	76
*Standard Gas & Electric	15	15½
*Standard Gas & Electric pf.	39½	40½
So. Cal. Edison	90	93
So. Cal. Edison pf.	105	108
Tennessee Ry., Light & Power	10	12
Tennessee Ry., Light & Power pf.	49	50
Toledo Trac., Light & Power	39	42
Toledo Trac., Light & Power pf.	80	84
United Light & Railways	50	52
United Light & Railways 1st pf.	74½	76½
Western Power	19½	21
Western Power pf.	70	72

*Par value $50